

Remarks

Claims

Claim 1 has been amended to replace “from the top” to “from a top position.”

Antecedent basis may be found on page 3 of the Specification, first paragraph, wherein it reads “top blowing jet.”

The primary reference under consideration is Deloche et al. U.S. Patent No. 6,034,431. Deloche et al. is relied upon as the primary reference in all of the rejections of claims 1-13.

The Invention

The gist of the present invention is that the hot blast occurs from a top position whereby a channel is melted through the scrap from top to the bottom. This leads to circulation of the gas within the scrap bulk; that is, the gas moves down through the scrap bulk (thereby melting it) at the position of the hot gas jet. At the bottom of the vessel, the gas further flows to the outer zone of the vessel, that is, almost horizontally away from the hot blast, and moves up at the outer zone of the vessel. After leaving the scrap bulk, a part of the gas is sucked in by the hot blast and thereby circulated within the vessel. This leads to intensive energy supply in the vessel. As a result, the off-gas leaving the vessel is cooler compared with prior art processes including the process according to Deloche et al. Note that to obtain the desired results, the hot blast occurs from a top position of the scrap bulk.

The Deloche et al. Reference

Deloche et al. teaches the use of injection lances that are attached to the sidewalls and are slanted downward by 10 degrees. The Deloche et al lances are thus nearly horizontal. The hot blasts of the lances converge at the bottom center of the vessel wherein the liquid steel is formed. After striking the melt, a stack effect occurs within the vessel; that is, the gas ascends to the top

of the vessel not striking any further scrap bulk. This leads to significant heat loss, as the nearly horizontal hot blast jets cannot entrain the hot gas ascending above the melted scrap. Instead, the hot ascending gas leaves the vessel as off-gas which leads to a significant heat loss.

The Examiner's Position

As understood, the Examiner reads Deloche et al. to teach that its injection nozzles can be located in the upper area of the sidewalls, and that this reads on the claimed limitation of charging hot blast to the scrap bulk "from a top position."

Meaning of "From a Top Position" as Currently Recited in Claim 1

Claims must be construed in connection with the other sections of the specification, and to determine the meaning of words, the Federal Circuit analyzes the claims, the specification and the prosecution history. *Markman*, 52 F.3d at 979. The specification "necessarily" informs proper claim interpretation because of its role in describing the claimed invention. *Philips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). The words of a claim should be given their ordinary meaning to one of ordinary skill in the art unless the inventor appears to use them differently. *Quantum Corp. v. Rodime PLC*, 65 F.3d 1577 (Fed. Cir. 1995).

Considering the specification of the current case, one may note first the drawing in which hot blast is supplied to the scrap bulk from a top position. The abstract, in fact, teaches that a significant improvement of the process is achieved by supplying hot blast to the scrap bulk from the top.

The specification throughout refers to hot blast being supplied to the scrap bulk from a top position. See the published application at, for example, paragraph 10, paragraph 11, paragraph 20, paragraph 37, etc. It appears beyond question that the current application calls for the hot blast to be supplied to the scrap bulk from the top position. "From the top position"

really means “from the top position,” and the specification tells precisely why this is important. In comparing the Deloche German patent specification, the specification of the instant application points out that through the use of the Deloche et al. configuration, the hot gas jets caused an upward flow in the center of the furnace with the result that a chimney was melted into the scrap bulk. A further problem was that the orifices in the sidewall have to be kept open with hot blast after the scrap is melted, with the result that the flatly arranged hot blast jet blows liquid slag onto the opposite wall. (Paragraph 8.) And in comparing the current invention:

The invention at hand avoids the described disadvantages of the theories of patent specification DE195 215 18 C1 for melting scrap wood fossil energy. . . . It was a surprising discovery that the described disadvantages of the process . . . are eliminated when hot blast with addition of fossil energy blows onto the scrap bulk from the top (emphasis added). (Paragraphs 9 and 10.)

It is thus apparent that Deloche et al. does not teach orienting a hot blast from the top.

We feel the language of claim 1 and the other claims in this case are clear and distinct, and readily distinguish the Deloche et al. reference. Withdrawal of the rejections under Sections 102 and 103 are courteously requested.

Section 103 Rejections

All of the claims have been rejected under Section 102 or Section 103 based on the Deloche et al. reference. Deloche, et al., of course, does not teach the instant invention, but rather, by teaching side jets, tends to teach away from the invention. Thus, all of the rejections based on Section 103 and which use, as the prime reference, Deloche et al., should be withdrawn.

A Notice of Allowance is courteously solicited. If a phone call to discuss the claims or references would be helpful, the Examiner is invited to call the undersigned.

Respectfully submitted,

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